

motor of the master section or from an output of a rotary encoder coupled with the machine shaft driven by said electric motor;

(b) a slave rotational frequency detection means and a slave phase detection means for detecting simultaneously at all times a rotational frequency signal and a phase signal from an output of a rotary encoder belonging to the electric motor of the slave section or from an output of a rotary encoder coupled with the machine shaft driven by said electric motor; and

(c) a phase deviation detection means for detecting a phase deviation from the outputs of said master phase detection means and said slave phase detection means at all times,

there being matched an origin of the electric motor of the master section and it of the slave section, or matched an origin of the machine shaft driven by the electric motor of the master section and it driven by the electric motor of the slave section based upon the phase deviation detected by said phase deviation detection means to achieve synchronous control.

2. A synchronization controller including a controller of a slave section for controlling an electric motor, said synchronization controller serving to accurately synchronize a rotational frequency and rotation phase of said electric motor or a machine shaft driven by said electric motor with a rotational frequency and a phase signal outputted from the master section, said slave section controller comprising:

(a) a master rotational frequency detection means and a master phase detection means for simultaneously detecting the rotational frequency signal and the phase signal outputted from the master section at all times;

(b) a slave rotational frequency detection means and a slave phase detection means for detecting simultaneously at all times the rotational frequency signal and

the phase signal from an output of a rotary encoder belonging to the electric motor of the slave section or from an output from a rotary encoder coupled with the machine shaft driven by the electric motor; and

(c) a phase deviation detection means for detecting a phase deviation from the outputs of said master phase detection means and said slave phase detection means at all times,

there being matched an origin of the electric motor of the slave section or the machine shaft driven by the electric motor based upon the phase deviation detected by said phase deviation detection means to synchronize rotation phase of said electric motor or the machine shaft driven by said electric motor with the signal outputted from the master section.

3. A synchronization control method including an electric motor for driving a rotating machine shaft and a controller for a master section and a slave section both for controlling said electric motor, said synchronization control method serving to accurately synchronize a rotational frequency and rotation phase of said electric motor or the machine shaft driven by said electric motor, comprising the steps of:

when plural electric motors for executing the synchronization control starts its operation from a stopped state simultaneously detecting at all times a rotational frequency signal and a phase signal of the electric motor of the master section or of a machine shaft driven by said electric motor in the slave section and further simultaneously detecting at all times a rotational frequency signal and a phase signal of the electric motor of the slave section or of the machine shaft driven by the electric motor;

obtaining a phase deviation from said rotational frequency signal and said phase signal; and

matching origins of said electric motors of each slave section or of machine shafts driven by said electric motors based upon said phase deviation during acceleration of all number of the electric motors or after all number of the electric motors reach a predetermined rotational frequency, and synchronizing the rotation phase of said electric motor or of the machine shaft with the phase signal outputted from the master section.

4. A synchronization control method including an electric motor for driving a rotating machine shaft and a controller for a master section and a slave section both for controlling said electric motor, said synchronization control method serving to accurately synchronize a rotational frequency and rotation phase of said electric motor or the machine shaft driven by said electric motor, comprising the steps of:

among the electric motors for effecting synchronization control there are some electric motors under operation and others electric motors in operation and the operation of the electric motors under interruption is started, simultaneously detecting rotational frequency signals and phase signals of the electric motors of the master section or the machine shafts driven by said electric motors at all times in the slave section and further simultaneously detecting the rotational frequency signals and the phase signals of the electric motors of the slave section or of the machine shafts driven by said electric motors at all times;

obtaining a phase deviation from the rotational frequency signals and the phase signals; and

matching origins of the electric motors of each slave section or of the machine shafts driven by the electric motors based upon said phase deviation after said electric motors reach a predetermined rotational frequency to synchronize the

Sub  
C4

rotation phase of the electric motor or of the machine shaft with the phase signal  
outputted from the master section.

---

SECRET